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Coronary Artery Disease

Short- and long-term follow-up with antithrombotic management patterns in patients hospitalized with acute coronary syndrome: Indian subgroup of EPICOR-Asia Study

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Background: Acute coronary syndrome (ACS) is associated with emergency hospitalizations, and there are limited real-world data on clinical outcomes in Asian post-ACS patients. This paper presents data on the Indian subgroup from the long term follow-up of antithrombotic management patterns In Acute CORonary Syndrome patients in Asia (EPICOR-Asia) study.

Methods: EPICOR included 12,922 patients with ACS (ST-segment elevation myocardial infarction [STEMI], non-ST-segment elevation myocardial infarction [NSTEMI], or unstable angina [UA]). The study had two phases: acute phase and follow-up phase. The primary objective was to describe short- and long-term antithrombotic management patterns (AMPs). Secondary objectives were to compare the association of AMPs with clinical outcomes of death and cardiovascular (CV) and bleeding events.

Results: EPICOR-India enrolled 2468 patients (STEMI – 1482; NSTEMI – 562; UA – 424). CV risk factors were present in 55% of the population. Pre-hospital care was received by 35% of patients, and the average time from symptom onset to first medical attention was approximately 7 h. Thrombolysis was initiated after admission in 29.1% of STEMI patients, whereas cardiac catheterization was performed in 74% of the overall population. The most common drug regimen prescribed during the acute phase was ≥ 2 antiplatelets + anticoagulants with no GP IIb/IIIa inhibitors and at discharge were aspirin + clopidogrel. Post-discharge outcomes at 2 years included death in 166 (6.7% [STEMI – 6.9%; NSTEMI – 9.6%; UA – 2.4%]), CV events in 177 (7.2% [STEMI – 7.9%; NSTEMI – 8.0%; UA – 3.5%]), composite events of death, MI, or ischemic stroke in 182 (7.4% [STEMI – 7.6%; NSTEMI – 10.9%; UA – 2.1%]), and bleeding events in 7 (0.3% [STEMI – 0.3%; NSTEMI – 0.2%; UA – 0.2%]).

Conclusion: This study has observed a gap between international recommendations and implementation for managing ACS in Indian patients. The poor pre-hospital care, delay in receiving medical attention, and fewer doctors opting for non-invasive interventions are some of the challenges in India. The mortality along with composite events of death, MI, or ischemic stroke was highest for NSTEMI patients. The reported CV events were similar

in STEMI and NSTEMI groups. Going forward, steps need to be taken to improve identification, diagnosis, and management of ACS patients to improve patient outcomes.

Association of serum platelet-lymphocyte ratio (PLR), neutrophil-lymphocyte ratio (NLR), non-HDL cholesterol levels with severity of acute coronary syndrome



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Background: Acute coronary syndrome (ACS) is one of the leading cause of cardiovascular morbidity and mortality worldwide. Various scoring systems are available for assessing the severity of ACS. Many serum markers are under investigation to assess the severity of ACS. Few of them are rather simple to assess such as platelet-lymphocyte ratio (PLR), neutrophil-lymphocyte ratio (NLR), and non-HDL cholesterol levels. Association between these markers and severity of ACS has been studied in the past and few studies have shown positive correlation between these markers and severity of ACS. However such association is not established in literature on Indian patients where there is increasing burden of morbidity and mortality due to ACS.

Aim: To assess serum PLR, NLR, and serum non-HDL cholesterol levels in patients with acute coronary syndrome (ACS).

Objective: To study the correlation between serum PLR, NLR, serum non-HDL cholesterol levels, and severity of ACS.

Methods: This is a prospective study on hospitalized patients with ACS. ACS was diagnosed based on clinical presentation, ECG, and cardiac biomarkers. Blood for hemogram and lipid levels was drawn at admission. Coronary angiography was performed through the femoral artery access and the angiograms were evaluated by two interventional cardiologists who were blinded to the study. The severity of ACS was assessed by Gensini score. A total of 86 patients who presented with ACS from February 2014 to April 2014 at Kasturba Hospital, Manipal were taken into the study.

Data analysis and interpretation was done with SPSS 20. A correlation between Gensini score and PLR, NLR, and non-HDL cholesterol was established using bivariate correlation analysis and Spearman's coefficients were calculated. The median Gensini score, median PLR, median NLR, and median non-HDL cholesterol levels were 56.5, 18.4, 4.94 and 133.67 respectively. Patients were divided into 3 equal groups based on Gensini score. Patients with Gensini score ≤ 40 were categorised as mild,

≥ 74 were categorised as severe, and remaining patients were categorised as moderate. The median PLR, NLR, and non-HDL cholesterol was calculated for each subgroup and were compared using Mann-Whitney U-test.

Results: We have observed significant correlation between PLR and Gensini score (with Spearman's coefficient of $r = 0.727$, $p < 0.05$) as well as NLR and Gensini score (with Spearman's coefficient of $r = 0.627$, $p < 0.05$). However a correlation could not be established between non-HDL cholesterol levels and Gensini score ($r = -0.49$).

The median values of PLR and NLR were significantly higher in the severe group compared to the mild and moderate groups with $p < 0.01$ for both PLR and NLR. Non-HDL cholesterol levels were not found to be significantly high or low among the subgroups.

Conclusion: We have established statistically significant correlation between PLR and NLR with severity of ACS. We recommend the use of PLR and NLR as markers for severity of ACS. Non-HDL cholesterol cannot be used as a marker for severity of ACS. Larger studies are required for further evaluation of these markers as a tool for assessing severity of ACS.

Prevalence of significant coronary artery disease in patients who undergo heart valve surgery in a superspecialized cardiac centre in Bangladesh



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Background and aims of the study: The presence of significant atherosclerotic coronary artery disease (CAD) in patients with valvular heart disease is an important predictor of perioperative mortality. The prevalence of CAD in patients undergoing valvular heart surgery is 20–40% in developed countries. We aimed to see CAD prevalence in our population undergoing valvular heart surgery.

Methods: A total of 1500 patients (1000 males, 500 females; mean age 52.5 ± 12.9 years) who underwent coronary angiography before valvular surgery between August 2003 and June 2012 was enrolled retrospectively. Single valve and multiple valve involvement were present in 43% and 56% of patients, respectively. Patients with ischemic mitral regurgitation were excluded from the study. Significant CAD was defined as the presence of $\geq 50\%$ diameter stenosis in any one of the coronary arteries. The presence of angina pectoris and of risk factors (e.g. hypertension, smoking, diabetes mellitus (DM), hyperlipidemia, family history of CAD) were sought in all patients.

Results: Significant CAD was present in 16% of patients (24% males, 9% females) ($p < 0.001$); the highest prevalence was in those with aortic stenosis ($p < 0.05$). CAD was not seen in young patients (aged < 45 years) with none of the above-mentioned risk factors. The highest correlation between CAD and risk factors was family history of CAD, followed by DM, hyperlipidemia, hypertension, and smoking in decreasing order.

Conclusion: The study results showed that CAD in patients with valvular heart disease was less prevalent in our population. The incidence of coronary lesions rises notably from the age of 50 years in both males and females. Coronary angiography before valvular heart surgery could be omitted in young patients (age < 45 years) with none of the coronary risk factors, or without angina.

Demographics and clinical outcomes of stent restenosis following PCI from a tertiary care referral institute in South India



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Background: Despite major advances in coronary hardware, particularly the newer generation DES, in-stent restenosis (ISR) following stent implantation is considered the Achilles' heel in PCI treatment of CAD. We sought to study demographics and clinical outcomes of stent restenosis following PCI from our Institute.

Methods: Patients who underwent PCI between Jan 1 2001 and Dec 31, 2014 at SSSIHMS, Whitefield, Bangalore and returned with symptoms suggesting ISR were evaluated as per demographic parameters, functional status, comorbidities, and echocardiographic parameters, including LVEF, angiographic, and angioplasty details including type of stent and treatment offered. These were collected at baseline, and at 9th month follow-up, and till last known follow-up with us. When patient returned for a second suspected ISR, they were similarly reevaluated. Angiographic ISR was classified as per Mehran classification applied to both BMS and DES.

Results: 14,634 patients underwent PCI in the above period, of whom latest clinical and echocardiographic follow-up was available in 8317 patients (56.5%). Of these, 371 PCI patients (4.7%) needed a second procedure for clinical and/or angiographic restenosis (255 patients underwent PCI and 116 patients, CABG). Mean age of patients was 56.3 ± 9.1 years. Mean LVEF was $48.5 \pm 7/5\%$ during presentation. Among the 371 patients, 217 had a BMS implanted initial PCI, 124 had DES implanted, and 30 had only POBA as the initial PCI. The average stent dilation pressure was 14 ± 4 atm, post dilation was done in $> 90\%$ of patients at an average 17 atm pressure. Among the 371 patients, average time from PCI to first readmission for restenosis was 334 ± 34 days in CSA patients (11–12 months) and for ACS patients, 227 ± 18 days (7–9 months), $p < 0.01$. CSA was the commonest presenting complaint with ISR ($n = 298$) and 73 patients (19.5%) presented to us or elsewhere with documented ACS (UA = 54, STEMI = 7, NSTEMI = 22). Among the DES, the initial implanted stent was SES in 51, PES in 69, and ZES in 4.

The earliest readmission for ISR causing a SAST was 91 days (3 months, 1 day) in a diabetic patient. On propensity-based univariate analysis, restenosis was more common in diabetics of > 5 years duration irrespective of HbA1C status. Also, average stent size was 2.5 mm vs larger diameter, and interestingly, when stent size was > 2.75 mm, stent length > 24 mm became the strongest predictive factor for future ISR. Male gender, PCI in bifurcation lesions with two-stent strategy (any technique) vs single stent strategy, and PCI in CTO lesions, PCI done in low EF ($< 35\%$) were predisposing factors to development of ISR.

The type of ISR as per Mehran angiographic classification was focal in 92, proliferative in 142, and total in 109 in the first event of ISR. BMS usage was significantly associated ($> 90\%$ case) with type III/IV proliferative ISR and more likely needed CABG in repeat admissions while DES ISR was more likely to be focal (72% cases) and was treated with balloon angioplasty (POBA and scoring balloon in 51). For the 371 ISR patients, repeat DES stenting was done as SES = 144, PES = 76, EES = 15, ZES Endeavour = 16. 18 underwent POBA alone to ISR lesion, 80 were treated with repeat BMS stenting with cutting balloon-plasty, and 4 patients were treated with DEB and BMS. For second restenosis, of the 223 patients available till last follow-up, 91 underwent a third angioplasty (75 with DES-SES = 66, EES = 5,